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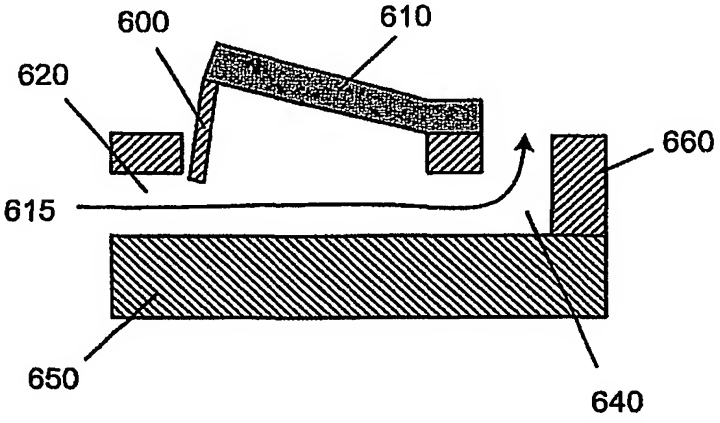
(54) Title: A MICROMACHINED KNIFE GATE VALVE FOR HIGH-FLOW PRESSURE REGULATION APPLICATIONS



(57) Abstract: The present invention discloses a microvalve for providing pneumatic -flow regulation suitable for use in microsystem applications that are operable using highly efficient actuation means for flow obstruction while being space efficient in design in a manner that is suitable for cost effective bullsk microfabrication. In an embodiment of the invention, the microvalve comprises a first substrate layer, a second layer disposed over the first substrate layer cooperating with the first substrate layer to form a channel through which the flow traverses and defines a direction of the flow. An obstruction element or knife gate is micromachined into the second layer such that it is pivotably attached and actuated with a bimorph actuator to displace the gate along a plane that is substantially perpendicular to the direction of the flow in order to controllably regulate the flow. In a further embodiment, a microsystem comprising the microvalve concept of the invention is microfabricated into an IP-converter for pneumatic high flow pressure control applications.

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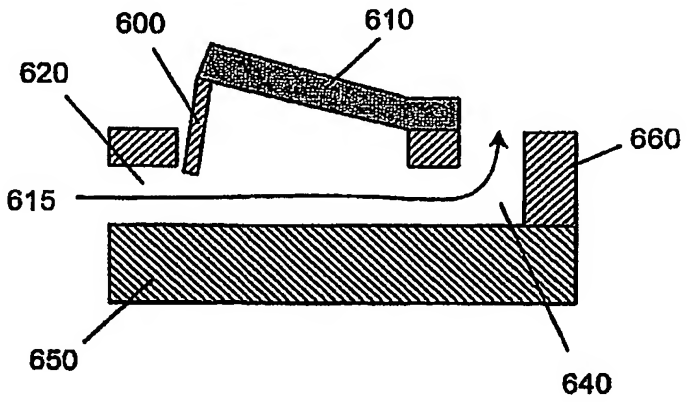

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